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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,445	02/13/2001	Jack H. Winters	2455-4376US2	9556

7590 06/15/2004

Morgan & Finnegan, L.L.P.
345 Park Avenue
New York, NY 10154

EXAMINER

VOLPER, THOMAS E

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/781,445

Applicant(s)

WINTERS ET AL.

Examiner

Thomas Volper

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 13 February 2001 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

No copy has been provided for any of the "Other Documents" listed, except for Litva et al. "Digital Beamforming in Wireless Communications".

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4-8, 10, 11 and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Alamouti et al. (US 2003/0156570).

Regarding claims 1 and 10, Alamouti discloses a wireless communication system including a receiver having an adaptive array with at least two antennas to receive a signal and produce at least two received signals (paragraphs [0268] and [0269]), a transmitter having at

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least two transmission channels for communicating the signal from the transmitter to the receiver (paragraph [0170]), means for suppressing interference at the receiver by applying an interference suppression technique (paragraph [0200]) and means for selecting a channel based on channel performance, which is a combining technique different from the interference suppression technique (paragraphs [0223] and [0268]).

Regarding claims 2 and 11, Alamouti discloses that the receiver must distinguish among different beams within its own cell and signals from other bases (paragraphs [0224] and [0225]). This meets the limitation of a receiver that is able to communicate with multiple transmitters.

Regarding claims 4 and 13, Alamouti discloses that the base station is the transmitter (paragraph [0170]) and the remote station is the receiver (paragraph [0269]).

Regarding claims 5 and 14, Alamouti discloses using a measurement of mean-square error for deriving an optimal beamform solution (paragraph [0206]). The beamforming is what provides the interference suppression (see paragraph [0200]).

Regarding claims 6-8 and 15-17, Alamouti discloses maximal ratio, selection diversity and equal gain as possible combining techniques to be used at the receiver antenna array (paragraphs [0274], [0276] and [0277]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alamouti et al. (US 2003/0156570) as applied to claims 1, 2, 4-8, 10, 11 and 13-17 above, and further in view of Bevan et al. (US 6,415,149).

Regarding claims 3 and 12, Alamouti discloses that the base station may act as the receiver having an adaptive array of antennas (paragraph [0290]), but fails to expressly disclose that the remote station may act as a transmitter that transmits on at least two transmission channels. Bevan discloses a softer handoff procedure in which the base station uses a diversity combiner to combine signals received from a mobile station in two different sectors (col. 7, lines 29-43). This meets the limitation of a mobile station that acts as a transmitter that transmits on at least two transmission channels. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the softer handoff procedure of Bevan, wherein the mobile station communicates with a base station array receiver over two transmission channels, in the invention of Alamouti. One of ordinary skill in the art would have been motivated to do this in order to provide greater diversity in the cell when a remote station moves about different parts of the cell.

6. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alamouti et al. (US 2003/0156570) as applied to claims 1, 2, 4-8, 10, 11 and 13-17 above, and further in view of Kapoor et al. (US 2002/0105928).

Regarding claims 9 and 18, Alamouti fails to expressly disclose using switched diversity combining as a combining technique at the receiver. Kapoor discloses using switched diversity combining at a receiver by measuring the instantaneous SNR for each sub-array's output and

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selecting the best option each symbol time (paragraph [0020]). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use switched diversity combining at the receiver of the invention of Alamouti. One of ordinary skill in the art would have been motivated to do this in case none of the other combining techniques were feasible.

Conclusion

7. Any inquiry concerning this communication, or earlier communications from the examiner should be directed to Thomas Volper whose telephone number is 703-305-8405 and fax number is 703-746-9467. The examiner can normally be reached between 8:30am and 6:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached at 703-308-6602. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

Thomas E. Volper

TE

June 9, 2004


HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600